ESTABLISHED 1878.

VOL. XV. CLEVELAND, OHIO, JUNE 23, 1892. NO. 26.

LAKE CARRIERS' ASSOCIATION.

To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interest of Lake Carriers, and improve the character of the service rendered to the public.

President: M. A. BRADLEY, - - Cleveland.

Vice-Presidents:

JOHN G. KEITH, -	Chicago.	JAMES W. MILLEN, -	Detroit.
W. S. BRAINARD, -	Toledo.	F. J. FIRTH, - -	Erie.
R. P. FITZGERALD, -	Milwaukee.	THOMAS WILSON, -	Cleveland.
ALEXANDER MCDOUGALL,	Duluth.	P. P. MILLER, - -	Buffalo.

Secretary: CHARLES H. KERR, - Buffalo.
Treasurer: GEO. P. MCKAY, - - Cleveland.
Counsel: HARVEY D. GOULDER, - Cleveland.

Board of Managers.

F. W. Baldwin, -	Ogdensburg.	Thomas Wilson, -	Cleveland.
F. J. Firth, - -	Erie.	H. M. Bradley, - -	Cleveland.
W. E. Chapman, -	Sandusky.	Jas. Corrigan, -	Cleveland.
C. T. Morley, -	Marine City.	H. M. Hanna, - -	Cleveland.
Alvin Neal, - -	Port Huron.	G. P. McKay, -	Cleveland.
James Davidson, -	Bay City.	H. G. Dalton, - -	Cleveland.
Charles A. Eddy, -	Bay City.	Harvey H. Brown, -	Cleveland.
Alexander McDougal, -	Duluth.	J. W. Moore, - -	Cleveland.
F. W. Gilchrist, -	Alpena.	B. L. Pennington, -	Cleveland.
J. C. Gilchrist, -	Vermillion.	Henry A. Hawgood, -	Cleveland.
J. L. Higgie, - -	Chicago.	W. C. Richardson, -	Cleveland.
Jesse Spaulding, -	Chicago.	S. D. Caldwell, - -	Buffalo.
J. S. Dunham, - -	Chicago.	Peter P. Miller, -	Buffalo.
John Keith, - -	Chicago.	E. T. Evans, - -	Buffalo.
Joseph Austrian -	Chicago.	James Ash, - -	Buffalo.
David Vance, -	Milwaukee.	W. Bullard, - -	Buffalo.
R. P. Fitzgerald, -	Milwaukee.	J. J. H. Brown, - -	Buffalo.
W. Livingstone, Jr., -	Detroit.	W. P. Henry, - -	Buffalo.
James Millen, -	Detroit.	John Gordon, - -	Buffalo.
David Carter, - -	Detroit.	W. S. Brainard, -	Toledo.
E. M. Peck, -	Detroit.	L. S. Sullivan, - -	Toledo.
D. C. Whitney, - -	Detroit.	A. W. Colton, - -	Toledo.
H. S. Hodge, - -	Detroit.		

CLEVELAND, O.

The local inspectors at this port are now more than ordinarily busy, the district being promptly covered at the expiration of inspection papers. Inspectors De Wolf and McGrath, with their well qualified assistants Gould and Plietz, carry out the inspection work of the Cuyahoga district with the greatest efficiency and with the least possible friction. There is no departmental work better performed than is the steamboat inspectors work of Cleveland.

The twelfth annual convention of the International Brotherhood of Boilermakers and Iron Ship Builders is being held in the city this week. One of the chief features of the convention will be to revise their constitution.

The Chase Machine Co. have just shipped to Marine City, Mich., an independent condenser, and to Escanaba, a vertical duplex pump for the tug Allie E. Shipman. The firm are now furnishing a compact deck hoisting engine which takes up a deck space of 4 by 4½ feet.

The River Machine and Boiler Works are placing on the rebuilt tug E. M. Peck, an iron boiler and deck house also other new work. Capt. E. C. Benham, her owner, will probably have her name changed.

At the yards of the Cleveland Ship Building Co., the second steel freight monitor Choctaw is now completed, and she will leave for Marquette on Saturday. The ways are laid and the keel for the third monitor is being got ready.

The large fueling scow Mansfield, was launched by the Cleveland Dry Dock Co. on Saturday. She will be used in Erie, Pa. by the W. L. Scott Co.

The time for this season's admission into the Lake Carriers' Association has been extended to July 1, the date formerly announced as the time when the books would be closed for 1892 was June 18.

During an altercation with Capt. Patrick Ryan of the Byron Whitaker, Ed July, his mate, tried to lodge a cartridge in the body of Capt. Ryan in this port on Monday. The shot went wide of the mark and July then made himself scarce, since which time nothing has been heard of him.

Capt. De Largie has been appointed to the Bradley Line schooner Negaunee, vice Capt. Leland resigned on account of ill health.

According to present arrangements, the Globe Iron Works Co. will launch the Anchor Line steame Schuylkill on Saturday, July 2, and the trio of "straightback" steamers will then be afloat. It is now stated that regarding these three steamers built at different yards for the same owners, that the Codorus, built by the Union Dry Dock Co. at Buffalo, will be the best carrier. The Mahoning, built at the yards of the Detroit Dry Dock Co., will have the best speed, but that the Schuylkill built by the Globe has the best model and will unite speed, carrying capacity, outfit, and appearance, so as to furnish the best satisfaction to the Line. However this may be, the career of the trio will be closely watched by builders and owners.

CHICAGO, ILLS.

Special Correspondence to The Marine Record.

The recent heavy rains causes a rapid current in the Chicago river and accidents and blockades are of frequent occurrence. The schooner Horace Taber, light, in tow, coming down the South Branch Saturday night about 9 o'clock, collided with Madison street bridge and had her jib-boom and bow sprit carried away and her jib-topsail torn. Saturday night at 9 o'clock the steamer W. H. Barnum, coal laden, going up the river, got across the river at the Illinois Central Railroad bridge, and remained there until Sunday afternoon at 5 o'clock, completely putting a stop to navigation up and down the river. Monday morning at 9 o'clock the steamer Inter-Ocean, loaded, in tow of two tugs, ran her bow aground opposite the Life Saving Station, and the force of the current swung her stern around, causing her to come into collision with the schooner E. R. Blake, loaded with ties, laying at a dock near the lighthouse. The schooner's jib-boom and bobstay was carried away and her jib topsail and flying jib torn, and the steamer carried away her smokestack and some steam pipes. Monday morning the schooner Barbarian, lumber laden, going up the river, in tow, collided with Wells street bridge and carried away her jib-boom, martingale and cathead. The barge Newel Eddy, coal laden, going up the river Monday, in tow of two tugs, collided with State street bridge and knocked about 30 feet of railing off the bridge and when going up the North Branch she collided with Indiana street bridge and carried away her horn. The steamer Charles A. Eddy, coal laden, which arrived Monday morning at 7 o'clock was not allowed by Harbor Master Dean to go farther up the South Branch than Lake street bridge, as the current was too strong to allow her to pass through the draw at the tunnel between Van Buren and Jackson streets, where the coffer-dam, which should have been removed some time ago, still remains as an obstruction to navigation. Tuesday morning at the earnest request of Captain John Shaw. Captain Dean allowed the steamer to try and get up the river to unload. Four tugs pulled ahead and the Eddy aided them all she could with a full head of steam, but all their united strength was useless to get her through the draw, and after an hour's hard pulling against the stream she was compelled to go back and tie up at a dock and wait until the current subsides. The work for which the cofferdam was built has been completed and the city authorities ought to have it removed at once.

We are pleased to know that the work of removing the Canal street bridge, which has so long been a nuisance and an obstruction to navigation, was begun last week.

The steamer Denver loaded grain at one of the Illinois Central elevators, and just after leaving the slip to go out Tuesday morning at 10 o'clock, she was taken across the river by the strong current, and carried against the abutment of the Illinois Central bridge, where she remained until nearly one o'clock p. m., when she was released.

Harvey Goulder, proctor in admiralty, Cleveland, O., was in the city Tuesday.

Henry L. Burger, shipbuilder of Manitowoc, arrived in Chicago, Sunday, on the steamer Virginia. At his shipyard the schooner Josephine is in dock for a new bow; the schooner Austin for some new plank on her run aft. The schooner I. M. Forrest went off the boxes last week after receiving a thorough rebuild. The firm are building a new tug for Capt. Coffee. Her dimensions are 72 feet over all, 16 feet beam, and 7 feet hold. Burger & Burger have enlarged their dry dock and can now accommodate vessels of 2,000 tons with dockage.

Capt. Dave Cochran has again put his steamer John A. Dix in splendid condition. She is a great favorite with excursionists, and we hope that good weather will soon set in to enable the worthy captain to make a good harvest to repay him for his enterprise.

At Miller Brothers shipyard the tug Robert Tarrant was in dock for a new wheel; the steamer Albert Soper for repairs to her stern bearing. The schooner Bertha Barnes recently ashore at Plum Island, goes into dock for examination and repairs to bottom and centre board

Grain freights are steady this week at 2 cents on wheat, 1⅜ cents on corn to Buffalo; 4 cents on wheat to Ogdensburg; 1⅝ corn, and 1⅜ oats to Georgian Bay ports.

The Henry syndicate, who have obtained the control of the lake excursion traffic to the World's Fair grounds at Jackson Park, chartered the steamers Sailor Boy, Post Boy and Music on Monday to carry excursionists during the summer months. No other steamers but those chartered by the syndicate will be allowed to land passengers at the Jackson Park pier. This is considered an outrage and will probably cause trouble.

Tha schooner George D. Douseman has been dismantled and towed to the lake front to be used as a landing stage for passengers riding on the steamers Chief Justice Waite and Ivanhoe.

We understand that James B. Kellogg and H. M. Robinson have formed a partnership for marine insurance business, and for the adjustment of marine losses. They will have an office at 12 Sherman street, rooms 8 and 9, Chicago.

The Goodrich Transportation Co.'s splendid steel twin screw steamer Virginia left here Tuesday morning at 9.30 for Milwaukee on her first trip of the season. Quite a number of passengers left on her. The Virginia is as finely equipped and complete a steamer as any afloat.

The sudden death of Emmons G. Blaine so soon after he had taken hold of the presidency of the Chicago Ship Building Co., is a matter of deep regret to the best citizens of Chicago. Especially is this so in marine circles, as it was confidently expected that the only iron and ship-building plant in Illinois would soon have represented one of the most flourishing and important industries of the State when the new firm got in full working order.

The schooner Belle Brown, which was in collision with the steamer Ira H. Owen, last week, arrived here Monday afternoon with lumber from Ludington. She will be repaired here. WILLIAMS.

BUFFALO, N. Y.

Special Correspondence to The Marine Record.

The success of the Tonawanda Lumbershovers Union in deposing the stevedore has led to an effort by the union here to exterminate him. The situation is an aunusual one in labor troubles because capital is in no way

(*Concluded on page nine.*)

Literary Notices.

The most desperate and most famous combat in the history of privateering during the war of 1812 was a fight in the harbor of Fayal, Azores Islands, between the American private-armed brig General Armstrong and a squadron of British men-of-war. This fight was far-reaching in its results, as it caused the delay of the British fleet, then on its way to take part in the expedition against New Orleans, and enabled General Jackson to arrive in that city four days in advance of the enemy. What would have been the result had this delay not occurred no one can tell. The battle in Fayal harbor—which, by-the-way, will be vividly described by John Heard, Jun., in a story in *Harper's Magazine* for July—has just now a timely interest from the fact that the famous "Long-Tom" gun, a 42 pounder, which played a prominent part on board the General Armstrong, and has since been kept in the Santa Cruz Fort at Fayal, is about to be returned to the United States. Some time ago instructions were given by the State Department to General Batcheller, Minister at Lisbon, to make a courteous request for the gun, and the King of Portugal very kindly consented to its removal. Secretary Tracy has ordered a ship of war to be sent to Fayal to receive it, and when it arrives in this country it is proposed to mount it in Lafayette Square, Washington, opposite the White House.

SHIPBUILDING AN IMPORTANT FACTOR IN THE IRON AND STEEL INDUSTRY.

The statistical report of the American Iron and Steel Association for 1891 states that the consumption of iron ore in 1891 was about 1,750,000 gross tons less than in 1890, or 15,740,000 tons, against about 17,500,000 tons in 1890. The decreased consumption in 1891 was borne chiefly by the producers of domestic ore. The imports of iron ore in 1891 amounted to 912,864 gross tons, against 1,246,830 tons in 1890. The prices at which iron ore was sold in 1891, were lower than in 1890. For 1892 they promise to be lower for some grades than in 1891. Some large lots of Lake Superior ore were purchased early in the year at about the same prices as those which prevailed in 1891.

While there was a shrinkage in production, as well as in prices in 1891, in nearly all branches of our iron and steel industries there was a marked increase in the tonnage of iron and steel industries there was a marked increase in the tonnage of iron and steel vessels built in the fiscal year which ended on June 30th., 1891. The iron and steel vessels of the merchant marine which were launched from American ship yards in the year mentioned, including the vessels built on the Great Lakes numbered 76, with an aggregate gross tonnage of 105,618,16 tons. This was by far the largest annual tonnage in our history, exceeding that of the next largest year, 1890, by 13 vessels and 25,240,44 tons. In the building of iron and steel vessels for the new American navy there was also great activity all through the calendar year 1891. Our shipbuilding yards are still very busy upon Government and private orders for iron and steel vessels.

FLOTSAM, JETSAM AND LAGAN.

Information is wanted of Patrick Quinn by his father. Patrick, left home about eighteen months ago, and is supposnd by his family to be sailing on the lakes. Any word of the young man will be received by addressing the above, Sault Ste. Marie, Mich. "Soo" papers please copy.

Point Pelee, Lake Erie, is a somewhat dangerous locality for vessels, last week a steambarge grounded there on the wreck of the schooner J. P. Nicholls, and had to lighten a portion of her cargo on to her consort. The Dominion Government ought to clear the ground in that vicinity of bad wrecks and their cargoes—or what remains of such.

A petition is being extensively signed by masters of vessels for the purpose of removing the fog bell at Point Iroquois to Pipe Island near Detour. Point Iroquois has now a steam whistle, and the removal of the fog bell to Pipe Island will be of great assistance.

Superintendent Lynch, of the Sault Ste. Marie Canal, has now instructed vessels that they may load to 14 ft. 3 inches.

Capt. Watts, late of the U. S. lighthouse supply steamer Warrington, left his steamer at Sault Ste. Marie last week and sailed for Duluth, where he will probably secure command of one of the whalebacks. Capt. Watts stated that his reason for leaving the Warrington was that he had been requested to go on shore and assist in clearing brush away from the ranges, and to do other work which was somewhat out of his line of duty.

Collector of Customs at all lake ports are determined to carry out the last Treasury Department circular and see that the names of vessels are painted on the hull, on each bow and the stern, name boards are ruled out as not complying with the law and the names will only be tolerated on the hull proper.

Canal-st. bridge, Chicago, against which the marine interests have waged unrelenting warfare for two years, is now being removed. It will be replaced by Capt. Harmon's jack knife bridge, which gives one wide draw in the center of the river, and is quite satisfactory to vesselmen.

CAPT. THOMAS CURRIE and E. C. Recor of Port Huron have sold the steambarge Huron City to Capt. Meswald, of Marine City, on private terms.

ARE SUCH THINGS POSSIBLE.

An editorial in the Buffalo "Enquirer" of June 14th, under the caption of "Four Unseaworthy Monitors," is something more than startling. If the facts are as represented, and coming from so reliable a source, a full credence may be given them, these coast defense vessels need to be tied up to a big rock in some protected land locked harbor, and there used as stationary forts. We quote the editorial alluded to at length.

"The coast defence monitor, Miantonomoh is a craft of but little value. On the run which this boat lately made from Annapolis to New York the monitor was in imminent danger of being flooded. The crew was kept busy with pails, pumps and mops, bailing the water which washed in every time a wave struck the boat. The crew of the Miantonomoh had a similar experience when the run from New York to Annapolis was made.

"The Miantonomoh is the same boat which went out for target practice and succeeded in discharging two projectiles in two days. The turret refused to revolve, and the crew was obliged to work it with handspikes. The guns when fired did no execution except to burst the ear drums of a couple of petty officers.

"During the Chilian troubles the Navy Department counted upon this boat to assist in the bombardment of Valparaiso. Had war been declared with reasonable promptness the Miantonomoh might now be lying at the bottom of the sea in West Indian waters. She would never have traveled further on her southern trip.

"There are three other monitors in the navy of a similar displacement and possessing about the same seagoing qualities. Such boats warrant the suspicion that the remodeled navy is not in such a condition of efficiency as has been studiously reported."

THE FISHING INDUSTRY OF THE LAKES.

The census bulletin on lake fisheries shows that a steady development of these fisheries has gone on during the past ten years. Ten years ago the total catch of Lake Michigan reached 11,570 tons, worth $668,000, while that of Lake Erie, the greatest producer of the five, was 14,500 tons, valued at $474,000.

In 1889 there were taken from the waters on Lake Erie the immense amount of 31,780 tons of fish worth over $1,000,000, while the production of Lake Michigan was but $13,000 tons, worth $788,000, the difference in relative value being due to the fact that while 60 per cent. of Erie's product is herring and less than 6 per cent. of it trout and whitefish, 45 per cent. of the catch of Lake Michigan is trout and whitefish, and herring constitute but 35 per cent. For all the lakes the percentage of increase in the value of the product in the ten years is 58.25, while 53 per cent. more men are employed, and 110 per cent. more capital is invested than ten years ago. Lake Ontario is the only one of the group where the industry has retrograded in the decade, the total catch falling from 1,820 tons in 1880 to 1,346 in 1889, a loss of 46.5 per cent in the value of the product. This result is by no means indicative of the exhaustion of Ontario fisheries, but comes rather from the legislation of New York State, restricting commercial fishing in the waters of that lake.

In 1889 the Lake Erie catch averaged nearly four tons for every square mile of water. Under thorough regulation and judicious culture, the fish product of Lake Erie will be three or even five times as great as that of the last census year.

SUMMONED TO WASHINGTON.

Major William Ludlow, Corps of Engineers, U. S. A., of the 9th. and 11th. Districts, which includes all aids to navigation on Lake Michigan, Green Bay and tributary waters, and the Straits of Mackinac, west of a line drawn across the Straits from Old Mackinac Point, and Commander Oscar, F. Heyerman, U. S. N. Inspector of the 11th. District, which extends from Grassy Island light station, Detroit River, to the head of Lake Superior on the American shores have been summoned to Washington each to their respective departments where they will explain certain departures which they have made in erecting and lighting the new range lights in the Sault Ste. Marie River. Instructions from the Departments are not always in accordance with the temporary interests of the locality in question, and the above named officers will probably point out where the discrepancies exist and then return to their appointed stations.

OGDENSBURG, N. Y.

(SPECIAL)—Robert Vallance, second engineer of the steamer Gov. Smith, while walking on some planking missed his step and fell to the bottom of the engine room, fracturing two ribs and his shoulder blade.

We are sorry to announce the death of Morgan M. McElligott, stevedore at the O. T. Co.'s elevator, which occurred after a brief illness with pneumonia. Mr. McElligott was a young man with many friends, and his early death is much regretted.

The steamer Sylvan Stream has resumed her excursion business among the Thousand Islands.

The Bon Voyage is now running between Rochester, Ogdensburg and intermediate ports.

The New York, Ontario & Western Railroad Co. have made arrangements with Superintendent Frank Owen, of the O. T. Line, to have four of the company's steamers stop at Oswego each trip, to take freight going West. E. C. B

SCREW PROPULSION.

BY JOSEPH R. OLDHAM, N. A., CLEVELAND, O.

So much has been said, so much has been written about the screw propeller and screw propulsion by eminent speakers eminent writers, eminent shipbuilders, eminent engineers, and the language made use of has been so diverse, so telling and so convincing that it would not be a difficult task to write a large and perhaps interesting volume on the subject of "patent screws." Indeed a discussion of the various merits and improvements of the patent screws would be ample matter for a volume, only the difficulty for the scribe would be, to assign a due proportion of merit to each of the multitude of inventors, or rather *patentees* for it is frequently difficult, not to say impossible, to discriminate between the disadvantages repudiated in the claims of one patentee, and the advantages claimed by another patentee, when the productions of the two are almost identical in design, and may be quite identical in operation or results.

And then as to illustrations, what a field for the draftsman, or rather artist, he could show large diameters and small diameters proposed for the propulsion of quite similar vessels, great surface and small surface, blades narrow at the tips, and blades broad at the tips, blades leaning forward, and blades leaning backward, curved blades and straight blades, large hubs and small hubs, true screws and untrue screws, yes, and wheels" called screws without any screw in them, and yet I positively assert that all the above types or peculiarities have even in recent years been claimed by men more or less eminent, as the one thing essential to efficiency in screw propulsion.

Now I would not for the world have it supposed that I am trying to show that there was no merit in these inventions, for on the contrary I know that many so called patent propellers are designed on sound principles, principles only understood and finally grasped after the most tedious and patient labor, and from information only to be obtained by costly experiments with models or on shipboard, much that has been written too, is worthy of earnest study both by the engineer and the ship owner, but it should always be borne in mind, that a great deal which has been laid down as law by some of the most eminent of men in my profession, was merely theoretical deductions, producing harmonious combinations, resulting unhappily from ill understood principles, for instance let me draw attention to that great shipbuilder, (Scott Russell) "Remarks on Twin Screws," as quoted on another page and compare this with the experimental results of quite recent date and note the alarming discrepancy.

I shall not attempt to go at all fully into this subject now, but as regards the surprising results said to be obtained when a patent wheel is fitted, particularly if it be not the first wheel fitted on the vessel in question. Let me say that he would be a poor engineer indeed, if, after learning something about the ship, the boilers, the engines and the original wheel, as well as the speed of both wheel and ship, if, I say, after obtaining such information as the above (or even somewhat less) if he could not design a wheel and show a great percentage (perhaps not all that usually appears in the papers) in favor of his patent wheel, but even this is not always the case, for I have recently known of a patent wheel being removed, and an old cast off, and a damaged wheel being fitted in its place with greatly increased efficiency.

Now we are proud, and justly proud of our great achievements as inventors, and it may be that we are the original inventors of the screw propeller which has formed the basis for design of our ordinary propeller of the present day, but in case anyone should be over elated at the stupendous results of this extraordinary marine invention, let me remind you, that though we may refer with pride to half a century's experience with the screw propeller, this invaluable invention was known to that curious and wonderful people the Chinese, ages ago.

As to inventors generally (unfortunately I am one) let me quote something I read many years ago, by Bourne, I think, who wrote to this effect, that individual projectors were like bubbles dancing on the surface of that majestic lake, though higher than the other liquid particles around them, yet their altitude was not to be measured from the lowest surface, and they were not the cause of the total exaltation. And so I shall not trouble you with the priority of invention in a brief paper of this kind, let it suffice in such matters to confine our thoughts to those most sturdy projectors who have been imbued with the courage of their convictions, and like many of the brave knights of labor, in modern, as well as in ancient times, have boldly stood firm by their goddess in moments of severe adversity, and have even lead the forlorn hope (which culminated in victory) upward and onward, when more delicate but perhaps equally meritorious minds, have hesitated, halted, and at last given up the unequal struggle against prejudice, misconception and self interest.

And so we will for a moment just glance at that sturdy genius "Francis Pettit Smith," the practical inventor of the screw propeller, for to him is due the credit of exemplifying the utility of the screw as a means for propelling ships at sea, when in the year 1840 he produced the first screw steamer so happily named the "Archimedes."

In a slight digression I would here remark that there is a certain practice or system, which I suppose we have all observed, and perhaps many of us have practiced with more or less success, from time to time, I mean the rule of thumb, you see it is called a *rule*, and perhaps very correctly so, for we have frequently seen the results of this practice, when put into execution by able men, worked out exactly as if by rule.

To give you one or two literal illustrations of what I mean, when I was a lad I used to work in a shipyard, where we had a somewhat celebrated naval architect, a man who knew all about the calculations necessary to fix the metacentric loci, or centre of lateral resistance, and as for the centres of effort or buoyancy, I verily believe he could have taught a student the *modus operandi* for locating these points whilst carefully cutting out a pair of sculls for an out-rigger, or reading a newspaper.

Not far off was a small shipyard, presided over by a man

to whom such figures as curves of stability, or righting levers, were perhaps stranger than the Greek alphabet, and would have been about as difficult for him to decipher as to show the kinetic energy of the cow that jumped over the moon, at the moment of impact with the earth. But yet, this man could and did produce time and again very superior models in all respects to his scientific confrere, the reason I opine was this, what we frequently hear spoken of as rule of thumb is really experimental knowledge, acquired quietly, sometimes unconsciously, but none the less real for all that. So this carpenter had learned by practice where to fine his models to make them hold their wind, and where to fill on them to make them safe to run with.

Another illustration—Let us take a merely practical old sailor, or marine engineer. I mean of the intellectual and thoughtful class which are to be found in every country. Ask such men how many tons to the inch his vessel displaces, or how far apart the stays in the flat surface of his boiler must be spaced in order to secure a certain working pressure, the one will answer you correctly, within a ton, the other to within half an inch, that is, when they are quietly looking over the side, or smoking their pipe during their watch on deck, but place the same good men under government examination for a certificate, or worse still, under examination by a shrewd admiralty lawyer, and see what bulls they will make, why to judge by their acquitment under such circumstances you would say, such men were not competent to navigate an elevator in a building, or a street car, which are certainly not the most dangerously rapid vehicles on this continent.

The mistake, even clever men frequently make, is trusting too much to figures without bringing good common sense and critical thought to bear on the result. You may prove the greatest absurdity by figures, so please look upon all extraordinary results shown merely by figures with suspicion, and then your own good common sense, acquired by careful experience, will often expose an error and reveal the truth.

As an example of the disastrous consequences resulting from the adoption of inventions of merely theoretical men I will briefly refer to one gigantic failure. The most perfect marine boiler (on paper) I ever saw was the "Turner Boiler." The circulation in this boiler would have been perfect and complete. The stresses to which alone it was subject (according to theory) were perfect, all were tensional. But the most disastrous failures I have ever known in connection with patent marine machinery were caused by the adoption of this (in one respect) theoretically perfect cylindrical combination boiler.

Again, in this case, there were not wanting rule of thumb engineers, who prophesied this failure, but such warnings were futile against experienced advocates, supplied with highly colored drawings, and still more highly colored circulars.

It has been said, by the most eminent engineers of the day (and repeated by authors of engineering and shipbuilding works of more or less celebrity), that the principle upon which nearly all marine propellers work, is the projection of a mass of water in a direction opposite to that of the required motion of the vessel.

Now, whether this be exactly correct or not, does not matter, I think, for the use I propose making of this axiom, and there is no doubt in the world, that the point is a debatable one, indeed, I may say that the assertion bristles with the variety of explanations surrounding the course taken by the water after contact with a revolving screw propeller, but though this be so, I will assume for the present that the water is so accommodating as to operate just as laid down at the commencement of this paragraph, for whether it be exactly so or not, will not materially effect the use to which I am now putting this hypothesis, for I submit that there cannot be any thrust from a screw propeller, any more than from a side-wheel, unless the water in immediate contact with the blades be projected astern, (when headway motion is the object of attainment) with a greater velocity than the surrounding water beyond the periphery of the "wheel" is being left astern. There must be excess of pressure on the driving side of the wheel, to produce thrust, just as with a screw working in a solid nut. When you screw, the pressure is solely on the driving side of the thread. When unscrewing is to be effected, the pressure will all be on the opposite side of the thread, just as obtains with the ordinary marine engine cross-head. You know that all the pressure is on the head-way guide when the engine is moving ahead, and all on the back-way guide when moving astern. Indeed, the action of the screw propeller (in water) may be similar to the action of the piston in the compound cylinder, pressure one side, partial vacuum, the other, the result, work.

I make bold to assert, speaking generally, that screw steamers are almost invariably overscrewed. This anomaly is partly intentional and partly excuseable, but it is wholly indicative of want of confidence.

It comes about somewhat in this way. The centre of shaft has to be arranged as one of the early steps in the design of a steamer, and even the most self-confident engineers, and self-reliant naval architects, appear to be overcome by the dread of being too low with this centre; hence, it is not uncommon to see screw propellers fitted on steamers, professedly from a few inches to a foot and more too large in diameter.

As an example of the gain to be realized by having screw propellers of proper dimensions and surfaces, I may cite the well known trials and changes effected in the "wheels" of the "Iris."

By reducing the diameter of her screws from 18 feet 6½ inches to 16 feet 3½ inches, and increasing the mean pitch from 18 feet 2 inches to 19 feet 11½ inches, a speed of 16½ knots was attained, with 2,400 less indicated horse power, the saving in power being not less than 32 per cent. As a recent example, I may say, that one of the latest British Atlantic "Record Breakers" has had her wheels reduced in diameter from time to time, till now the diameters are 12 or 18 inches less than they originally were.

The "Teutonic," as is well known, was over-screwed. The diameter of her "wheels" being 19 feet 6 inches, pitch 28 feet 6 inches, and the total disc area about 600 square feet.

If a man wanted an excuse or required an apology for presuming to touch on screw propulsion, surely such indications as the above of puerile and weak kneed designing, would supply the excuse and form the apology.

In ordinary cargo steamers the first thing we have to consider is the wetted skin, and in ordinary Lake steamers, the only thing we need to consider (to obtain our horse power) is the wetted skin. To ascertain this the following *formula* will suffice: Where B equals the extreme breadth, D equals the mean draft, L equals length on keel. Where $B + 2D \times L \times .96 = 40 + 32 \times 290 \times 9$ equals 18.792, which is the square feet of wetted surface in one of our ordinary steamers.

Now, to be safe for a ten knot average speed, we must allow one-horse power for every fifteen feet of wetted skin, thus: 18,792 ÷ 15 equals 1,253, and these steamers can steam fully 10 knots per hour with 1,250 H. P. Or further, if we allow one H. P. for every 3¾ tons of displacement up to the ordinary load line, this will also secure us a safe 10 knot speed. For the ratio of horse power to displacement in various steamers, I annex the table A. Here is an ordinary lake steamer of 4,700 tons load displacement, and fully ten-knot speed, now 4,700, divided by 3¾ equals 1,253, which is the I. H. P. required.

[*To be Continued.*]

AIDS TO NAVIGATION

Congressman V. A. Taylor while at Cleveland last week, stated that the measures for the benefit of the lakes were in very encouraging shape at Washington and says that most of the appropriations will be obtained without difficulty. President M. A. Bradley, of the Lake Carriers' Association, received the following telegram from Secretary Keep, at Washington, stating that "Senators McMillan and Sawyer, by hard fighting, induced the Senate Committee on Appropriation to provide in the sundry civil bill for Bar Point lightship; floating lights at Limekiln Crossing, Grassy Island, Grosse Isle and Mamajuda ranges; Upper St. Mary's Range, and authority to use the Eleven Foot Shoal Lighthouse appropriation for lightships."

With regard to the latter shoal, which is at the entrance to Green Bay and close to the regular course of all Escanaba ore carriers, the owners of the latter recently started what seemed to be a successful movement for the establishment of a private lightship there, to be paid for by boats in the Escanaba ore trade, but the passage of the sundry civil bill, with this provision, which is likely to occur within a month, will now happily render such a step unnecessary.

LAUNCH OF THE MAHONING.

There was launched from the Wyandotte yards of the Dotroit Dry Dock Co. on Saturday afternoon the fine steel freight steamer Mahoning, built to the order of the Anchor Line, E. T. Evans, manager, Buffalo, N. Y.

The Mahoning is known as one of the trio of "straight backs" or sheerless steamers, and is 295 feet overall, 275 feet keel, 50 feet beam and 26 feet deep. She will carry 2600 tons on a 15 feet draft and her average speed is estimated at 13 miles per hour. Her triple expansion engines are 20, 33, and 54 by 42 inch stroke, two Scotch type boilers 13 feet in length by 14 feet dia., tested for 160 pounds steam, and the propeller is 12½ feet in dia. by 17 feet lead. She will be fitted with one spar forward and have the best cargo handling equipment devised for speedy work. Extra fineness has been given the hull and the thirteen mile speed is no doubt less than she will be found capable of.

The Messrs. Kirbys', scrutinized by nearly the whole population of Wyandotte, conducted the launch in their usual prompt and successful fashion and the Mahoning will be ready for business in about three weeks.

"A look at the lines will show that such a yacht as the Gloriana will actually shorten her water-line as she heels down on her powerful bilge, and she can only increase her length by increasing at the same time her displacement, which we know is theoretically and practically constant, whether she is at anchor or at her highest speed. At anchor the yacht is larger and more powerful than the others of her class by virtue of the extended area of the loadwater line plane, the advantages of which have always been realized by successful designers—the Herreshoffs in particular. Looking at the actual value of the long ends, apart from the peculiar form of the boat proper, the first point noticeable is that while they result naturally from the carrying out of the long fore and aft curves to their legitimate endings, a large part of each end might be cut off without loss of power; in fact, so far as speed in smooth water is concerned, and apart from all question of appearance, the two ends might be cut off plumb with the water line, as in the scows to which the Gloriana has so often been compared."

A MASTERS LICENSE REVOKED.

The local inspectors at Detroit have concluded their investigation of the late collision between the steamer City of Mackinac and the tug Washburn in Detroit River, by which unfortunate occurrence John Hurley and W. F. Robinson were drowned. The result is that the license of Capt. George Burns, who sailed the Washburn, is revoked for gross carelessness. The finding has been approved by Supervising Inspector Westcott. There is some talk of an appeal being taken, but the opinion generally prevails that nothing of the kind will be done.

A RIVER always appears more shallow than it really is, because the light proceeding from the bottom of the river is refracted as it emerges out of the water. A river is about one-third deeper than it seems to be. If, therefore, a river of clear water seems only four and one half feet deep it is actually six feet deep. Many persons get out of their depth in bathing in consequence of this deception. Remember, a river is always deeper than it looks to be.

Notes.

IT is reported that the only point of difference now remaining between the Senate and House Conference Committee on the River and Harbor Bill relates to proposed improvements in the new State of Washington.

CAPT. BLACKLAW, commander of the British steamship Hay Green, has been presented by King Oscar of Norway and Sweden with a valuable binocular glass encased in silver for heroism displayed in rescuing the crew of Norwegian brig Sophie, while bound to Philadelphia.

On the inland waterways, which traverse the World's Fair grounds from one end to another, there will be plying three kinds of boats for public use. There will be the omnibus, express and cab boats or launches. The omnibus boats will make regular trips around the waterways, stopping at each building. The express boats will make round trips without stopping, while the cab boats, with carrying capacity of four persons, may be hailed at any point and engaged for the trip or by the hour, as is a hansom cab.

ON the Clyde during last month twenty seven vessels were launched, representing a tonnage of 37,000. The most notable works on hand are a cruiser of 7,700 tons, three vessels of 2,500 tons each, and several other vessels.

JUDGE NELSON, of the U. S. Court, at Boston, has ordered a verdict of $17,300 to be entered in favor of the schooner Lucy James against the steamship City of Savannah. The Court decided the officers in charge of the steamers were incompetent and inattentive to their duties, and were greatly negligent or ignorant of their duties or both in their calculations of distance on approaching the schooner.

THE progress of shipbuilding from earliest times up to the present will be shown by a very extensive exhibit at the World's Fair by Laird Bros., the big English shipbuilding firm at Birkenhead. The firm's exhibit of like character at the recent English naval exhibition attracted a great deal of attention.

THE mayor of Philadelphia has received from the State Department at Washington, a solid gold goblet which the Emperor of Russia desires presented to Capt. Sargent, of the steamer Indiana, in rememberance of the part taken by him in carrying food supplies to the Russian Famine sufferers.

THE RISE AND FALL OF TIDES.

The recent singular rise and fall experienced in the level of Lake Superior from Sault Ste. Marie to Duluth, or more especially at each extremity, is phenomenal.

In glancing at the phenomena in other parts of the world it is found that in—

"Chepstow, in the Bristol Channel; Mont. St. Michael, in the Gulf of St. Malo; Dungeness Spit, near Cape Virgins; and the Basin of Mines, at the head of the Bay of Fundy,—are all places celebrated for a great tidal rise and fall, which in exterme cases amounts at some of them to 70 feet and upwards.

"On the other hand, in the open ocean, where the tide wave is untrammelled, the range is but four feet or so, and in in inland seas it is almost insensible. For instance, among the islands of the Pacific Ocean the rise and fall varies from 3 to 6 feet, and in the Mediterranean the average rise and fall does not exceed 18 inches, though in places—Sphax for example—owing to local causes, the rise and fall is full five feet.

"Lakes and inland seas being comparatively small, the attraction of the sun and moon is nearly equal at both extremities, therefore their tides are insignificant. Close investigation backs up the theory that the magnitude of the tidal range depends upon the proportion the size of the lake or sea bears to the diameter of the earth: for instance, the existence of a tide in Lake Michigan has been proved by a series of observations made at Chicago in 1859. The average height of this tide is 1¾ inches; and the average time of H. W. is 30 minutes after the moon's transit. The length of Lake Michigan is 350 miles, or 1-23 of the earth's diameter; and its tide is about 1-23 of that which prevails in mid-ocean. Again, the length of the Mediterranean is 2,400 miles, or, roughly, ⅓ the diameter of the earth, which gives the average height of its tide as ⅓ what it is in the open sea, and this is confirmed by observation.

"The tide current, then, is caused by tide waves from the ocean being concentrated and checked by local formation, also by the frictional resistance offered by the bottom and sides of a narrow channel. In passing through contracted spaces, these waves, as already stated, are heaped up and urged on by the continued pressure of the water behind, whose motion is less retarded than that of their own; and thus, in seeking to find its level, an actual current is created.

"The tide current must not, however, be mixed up with the general ocean currents, which are progressive movements of the water, due partly to prevailing winds, and partly to differences of temperature and density, which, by disturbing the equilibrium, cause a constant circulation to be going on in the waters of the globe; and this, be it remembered, takes place in a vertical as well as a horizontal direction."

THE John Pridgeon was the first vessel to pass out the entire length of the new straight channel, at Toledo, O., no stakes are yet up, and vessels cannot use the straight channel for the present.

The Marine Record.

ESTABLISHED 1878.

Published every Thursday, at 144 Superior Street, (Leader Building,) CLEVELAND, O.

IRVING B SMITH. }
CAPT. JOHN SWAINSON. } - - Proprietors.

BRANCH OFFICE,

CHICAGO, ILL., - - - 35 Franklin St.

THOMAS WILLIAMS, Associate Editor.

SUPSCRIPTION.

One copy, one year, postage paid, - - - - - $2 00
One copy, one year, to foreign countries, - - - $3 00
Invariably in advance.

ADVERTISING.

Rates given on application.

CLEVELAND, O., JUNE 23, 1892.

THE bridges across Chicago river are often cited as cases where spans across navigable waterways are not ruled as obstructions. Such is not the case, however, for there is no port in the world where shipping is so obstructed and hampered as it is in Chicago, and the record of the past few days found in our Chicago letter partly shows to what extent the floating commerce is impeded and delayed by a few of the artificial obstructions to navigation

REGARDING the two officers relieved from duty while staking and lighting the Sault river, investigation will, no doubt, prove that the measures taken by these well-known officers was for the best interests of shipping. A temporary suspension from duty is only a waste of time, and a full inquiry should at once be instituted, so that the system of locating beacons, buoys and ranges in the Sault river may be accurately and permanently determined.

THE Seaman's Union are now evidently desirous of meeting the competition caused by the new Lake Carriers' Association shipping offices and have reduced their scale of wages to more nearly correspond with the card rates as offered by the owners. The Union seems to lose sight of the fact that the change in lake tonnage, from sail to steam, has brought about an entirely different state of labor and the marlinspike sailor is now discounted by the deck hand, or at least the helmsman and watchman.

LIGHTING ST. MARY'S RIVER.

It appears that some two years ago the Light House Board approved a crude plan for lighting the St. Mary's River with thirty-eight lights. This plan was formulated without a close inspection of the river or careful consideration as to the actual number of lights required and their location, it being intended to do this in the customary manner after the appropriation was made and the work ordered. Early this spring Colonel William Ludlow, Engineer for the Light House Board of the 11th District, was ordered to the Sault River to erect the necessary range lights preparatory to the lighting. Upon getting actively at work he discovered that the thirty-eight lights would not answer, changes in the channel having been made by government dredging, which were not taken into account at the time of the original location of the lights. The result of his work led him to adopt a plan consisting of forty-four lights, and under the modified scheme, by reason of the increase of lights on the shore and the doing away with certain piers near the channel, the cost of establishing the whole system consisting of forty-four lights, was about $1,000 less than that required to build under the thirty-eight light plan. Colonel Ludlow reported this to the Light House Board, but was instructed that the thirty-eight system must be adhered to. To this he protested but without avail. The board instructed Commander O. F. Heyerman, U. S. N. Inspector 11th District, to visit the Sault River and confer with Colonel Ludlow in regard to the lights, the result of which conference was a united protest by both of the District Officers Ludlow and Heyerman to the board against carrying out their orders to erect only thirty-eight lights in the situation as directed by the board. This protest was of no avail with the board, who ordered them to proceed with the work as directed. To this the engineer and inspector, who were on the river, signified a willingness to put up such of the thirty-eight lights as could not be misleading to navigation, but declined to erect those which if followed would carry boats away from the channel of the river and on to the rocks. The location of the ranges thus brought prominently into dispute, were at the Black Hole and at Topsail Island, two of the most dangerous places, as every Lake Superior seaman knows, on the Sault River. In reply to the stand taken by Colonel Ludlow, U. S. Engineer, and Commander Heyerman, U. S. N., the Light House Board relieved them from their duties, ordered them to report at Detroit, and wait the arrival of their successors.

Col. Ludlow has filled the responsible position of engineer of the district for a good many years with great credit. His abilities are recognized and appreciated to the fullest extent by everyone familiar with the navigation and commerce of the Great Lakes.

Neither officer will talk on the subject of their recall from St. Mary's River, but it has been known for some time that the judgment of the officers regarding the location of certain range lights was in conflict with the orders of the Light House Board at Washington—orders, which if carried out, would, it is stated, inevitably cause disaster to any vessel attempting to navigate the river by the aid of such lights. It is now hoped that the officers will be ordered to Washington for a full and complete investigation and they have the sympathy of the entire vessel owning community on the lakes.

A LIFE SAVING STATION AT GODERICH.

There is every humanitarian argument that a member of the Dominion Legislature need to be armed with for advocating the small appropriation necessary to secure the a crew of life savers at Goderich, Ont. This station covers an exposed coast line on Lake Huron, which, with anything from the westward in the spring and fall is a dead lee shore for all crippled vessels or others that are not able to crawl off a lee shore, and many have fetched up in that locality.

Capt. Wm. Babb now operates a volunteer life saving station and has for a number of years past done excellent service at that point, and in some instances, we are sorry to say, without receiving the slightest acknowledgment from those whom he has succored in distress or the owners of the property which the efforts of himself and crew have been instrumental in saving.

The United States, or the citizens thereof, can but endeavor to make reparation for the heroism, loss of time, and energy expended by the volunteer crew when American lives and property have been rescued from impending danger and such recognition it is a pleasure to state has been earned by the Goderich life savers in the past. Yet, while it is questionable whether we might even offer a suggestion to the Dominion in these matters, it is strictly within our province to call attention to the location as one worthy of exception, in so far as keeping a paid crew in commission is justified.

Only last fall the American schooners Edward Kelly and the George were rendered valuable assistance by these volunteers, especially the former vessel, and no doubt the owners promptly acknowledged the bravery skill displayed by the volunteers in rendering assistance to their property, yet these matters should not be left entirely to private munificence, good will, or courtesy; rather ought the country on whose shores the seaman is castaway take cognizance of his situation by putting forth some means to save his life, when, through the action of the elements he or they are cast upon its coasts and left destitute of all but dear life and sometimes only a portion of even that remaining.

There are without doubt certain points on the Dominion owned shores of the Great Lakes where for the honor and prestige of the country, if not for humanitarian reasons alone, life saving stations should be kept in active service, and Goderich is one of these points. There is little doubt but that Mr. Charleton could tell the Dominion Legislature or the Minister of Marine many cases wherein the Goderich volunteer life savers have acted as true Canadians and if the information does not come to him readily there is sufficient evidence to be gained from the owners and crews of American vessels to prove how inadequate the recognition or recompense that is now awarded to the brave men who have for years nobly guarded this lee shore point of the Lake Huron coast, and while candidly admitting that it is the province of every true man to rescue his brother in distress, it is only a national courtesy to see that provision is made for such emergencies as only a life saving station can offer.

CANAL TOLLS.

The question of Welland Canal tolls will not down, and it now seems too late for the Dominion to make any compromise even if such was the disposition evinced. Senator Davis has introduced a resolution to the Senate empowering the President to fix a rate of tolls through the St. Mary's Falls Canal as follows: "Upon freight, not to exceed $2 per ton; upon passengers, not to exceed $5 each, as shall be from time to time determined by the president; provided that no tolls shall be charged or collected upon freight or passengers carried to and landed at Ogdensburg or any port west of Ogdensburg and south of a line drawn from the northern boundary of the State of New York, through the St. Lawrence river, the Great Lakes and their connecting channels to the northern boundary of Minnesota.

The second section of the bill authorizes the Secretary of the Treasury to prescribe regulations for the collection of the tolls, and requires sworn statements from the masters of vessels.

The bills are to constitute a lien on the vessel.

It is further stated that the authority shall include absolute prohibition of the rights of transport if further discrimination by the Canadian Government is indulged in.

NOTICE TO MARINERS.

UNITED STATES OF AMERICA—NORTHERN AND NORTH-WESTERN LAKES.

Sherwood Point Fog Bell.

Notice is hereby given that, on and after July 1, 1892, during thick or foggy weather, a bell will be sounded from the bell tower recently erected at Sherwood Point Light Station, south side of the entrance from Green Bay into Sturgeon Bay Wisconsin. The tower is a square pyramidal structure about 25 feet high, the lower part painted white, the upper buff, shingled, with bright red roof, and is situated about 13 feet N. N. E. of light tower.

The bell will be struck by machinery a single blow every 12 seconds.

By order of the Light-House Board; James A. Greer, Rear-Admiral, U. S. Navy, Chairman.—[Office of the Light-House Board, Washington, D. C., June 20, 1892.]

The Canadian Department of Marine has decided to place a pole light on Potter's island to mark the intricate passage near Nigger island, at the foot of the Murray canal. Four ranges of lights will shortly be erected in the St. Mary's river to enable vessels to reach Sault Ste. Marie at night from Lake Huron. These lights are being erected in conjunction with other ranges which the United States Government is establishing.

A MODERN WOODEN SHIP-YARD.

A recent issue of the West Bay City Post, a marked copy of which has been kindly forwarded to this office, gives a lengthy description of the mammoth shipyard of Capt. James Davidson, also a short sketch of Capt. Davidson's life. The yard, which is claimed to be the largest wooden ship-building plant in the world, covers 40 acres of ground, and turns out on an average $1,500,000 a year in vessel property, pays in wages at least $700,000 a year, and employs between 600 and 1,000 men. There are now on the stocks at the yard six boats. Three of these boats are steamships, and are, by actual figures, the largest wooden steamships in the world. Two very large schooners, each 2,200 tons, are also in process of construction.

The steamships are 326 feet long, 43 feet beam, and 26 feet moulded depth. They are steel-arched, steel-corded, and have steel keelsons. In fact, they are strong and substantially built throughout. It is unnecessary to give the details of Capt Davidson's life, as he is well-known all along the lakes.

STEAM VESSEL INSPECTION.

The following are the names of steamers in the Cleveland district whose certificates of inspection expire during the next seven days.

June 23, George R. Paige, ... Fairport, O.
June 23, Star, ... Fairport, O.
June 24, Viking, ... Cleveland, O.
June 26, Reliable, ... Huron, O.
June 29, Barney Cohen, ... Toledo, O.
June 29, J. R. Ernest, ... Toledo, O.
June 29, J. R. Worswick, ... Toledo, O.
June 29, Thompson Bros., ... Toledo, O.
June 29, Companion, ... Toledo, O.
June 29, Leroy Brooks, ... Toledo, O.
June 29, Skipper, ... Cleveland, O.
June 30, Wm. Edwards, ... Cleveland, O.
June 30, Grecian, ... Cleveland, O.

LAUNCH OF THE W. H. GILBERT.

The handsome steel steamer W. H. Gilbert, built to the order of the Erie Transportation Co., was successfully launched from the yards of F. W. Wheeler & Co., Bay City, on Thursday last.

The Gilbert will be equipped with all modern inventions for the handling of ship and cargo and will rank among the first class steel tonnage of the lakes. She is 328 feet keel, 42 feet beam and 24 feet deep. Special attention has been given to her machinery equipment and she is expected to develop a a high rate of speed with a large carrying capacity on a moderate draft.

Capt. Calvin Chamberlain takes charge of the new steamer and he will appoint the other officers at once, as the Gilbert will be ready for business in a few days.

WHALEBACK LAUNCHES.

There will be launched from the yards of the American Steele Barge Co., at West Superior next Saturday the "Soo" Line steambarges Pillsbury and Washburn and on July 2nd the Pathfinder and consort Sagamore built to the order of the Huron Steambarge Co., a syndicate composed of Cleveland capitalists. These four vessels easily mean a 10,000 ton increase in the freight tonnage of the lakes.

(*Continued from page five.*)

implicated. The union want to unload boats on the co-operation plan and not be hired by the stevedore or gang boss, who takes the contract for unloading the vessel. At meetings held by the union it was resolved to either exterminate the stevedores or go out of the lumber shoving business themselves. No violence is intended on either side,and if this position is maintained war in prices is likely, in which case the lumber dealers and vessel owners would find their unloading expenses reduced, which they would hardly object to. They will probably favor both sides and profit thereby.

The steamer Pilgrim broke a bucket off her wheel last Sunday. Monday she went into dry dock and had another knocked off to balance her machinery. She will work with a two-bladed screw until a new one can be cast.

Maytham's new tug, which as yet has no name, is down for a launch this week. She is 92 feet long, 19 feet beam and 10 feet depth of hold. Her engine is 24 x 28 single high pressure, built by Sutton Bros., and her boiler is 9 x14 feet, from Riter's Eagle Boiler Works. The tug was built by O'Grady & Maher and will be ready for service about the middle of July. O'Grady & Maher have also just finished a small tug of 7 tons register for Michael Dunn, of Tonawanda.

The new excursion steamer Columbia was taken out for a trial trip last Saturday. She seems likely to fulfill the 16-mile-an-hour-expectations of her owners. The Columbia's equipment will be the most complete of any excursion steamer running out of this port.

It transpires that the late John L. Schrader was not so comfortably fixed financially, as the first dispatches sent to Cleveland indicated. In fact, Mr. Schrader's family was left almost penniless. Over $600 has been raised in Chicago for his widow. The Buffalo Press Club also gave her some help, and adopted resolutions of sympathy and condolence. Mr. Thomas O'Brien is now doing marine on the *Courier*. Mr. O'Brien is a good news paper man, and of some experience in marine matters, having, before entering the newspaper profession some time since, been for some years in the dock office of the Lehigh Valley Transportation Co.

The situation in coal freights may be called comfortable. Boats and cargoes are in about even demand. The movement is fairly heavy, and no change in rates either way is expected this week.

Canal freights are dull at 2¼ cents for wheat; 2 cents for corn, and 1½ cents for oats to New York.

The tug James Ash filled and sunk at her moorings alongside the Richmond elevator this week, by reason of a leak in her stern pipe. She will be docked for repairs.

Supervising Inspector of Steam Boilers Oast, of the third district, from Norfolk, Va., was in town during the A. B. M. A. Convention, and was shown through Lake Erie Boiler Works by Inspector McMaster. He was much surprised at the completeness of the plant. and said there was no finer in the country, not even at Newport News, in his own district.

KINGSTON, ONT.

The surveyors on the burned propeller Glengarry appraised the damages to the hull at $14,210, and as the steamer was insured for $20,000, the loss is covered. The cargo of grain was sorted here by the British American Assurance Co. and their agent, Mr. Chapman, the well known grain merchant, thought he had saved 19,000 bushels out of a total of 21,000. Information has just come from Montreal that the grain inspectors of that port condemned the whole cargo through damage from smoke. Capt. W. R. Taylor, for the underwriters, and Capt. T. Donnelly, for the owners, held the survey on the steamer Glengarry and her two consorts, the Glenora and John Gaskin.

Word has come from Capt. George Bathan that the new steamer Columbian is rapidly nearing completion at Chester, Penn., and will be able to make the first trip from Kingston to Montreal on July 4th.

The tug Petrel was launched from the yards of the Collinsby Rafting and Forwarding Co. on Saturday ,and as this was the first steamer launched from this yard, the visitors made the occasion a gala day. Excursions were run to Collinsby from different ports in the vicinity by the steamers Princess Louise, Maynard, and Where-Now, and a very large contingent of visitors went out from the city. The Petrel was built under the direct supervision of Mr. William Leslie, manager of the Collinsby Rafting and Forwarding Co., from designs by the well known ship builder, Capt. Pierce, and the work was done by Mr. W. Glen, late of the Polson Co. The steamer is built of steel throughout, half inch plate on bottom and bilge, and ⅜ inch plates on sides, and the deck houses are of steel, the only wood in the hull being the 4-inch elm planking which covers from the keel to the light water mark. Her dimensions are 128 feet over all, 26 beam, and 10 depth of hold. She has twin screws, 18x20 stroke, with independent condensers, and two boilers 8 feet in diameter, No expense has been spared in the building of the hull, and your correspondent takes pleasure in saying that for strength and workmanship the hull of this steamer outrivals anything he has yet seen in this country. The steamer is fitted with a very powerful steam winch for releasing vessels from the beach. The equipment is of the most modern design, and when completed, ought to be the best equipped wrecking steamer on the Lakes. She is lighted throughout by electricity, and the accommodation for the crew is large and convenient, Miss Lorraine Leslie, the accomplished daughter of the company's manager, broke the customary bottle of champagne, and we echo her expressed wish, "Success to the Petrel." Capt. A. McDonald will have charge of the Petrel, with E. J. Taylor as engineer.

A serious accident happened to the steambarge Clinton, on Monday morning. This steamer is owned by the well known firm of J. and J. T. Mathews, of Toronto, and was in command of Capt. R. Walton, bound from Chicago to Kingston, with a cargo of 18,000 bushels of rye. On Sunday night a heavy fog set in, but Point Peter whistle was heard, and the course set for the Duck Light. Suddenly, without warning, the steamer ran on the southwest side of the Main Duck Islands. Some of the cargo was thrown overboard, but the sea made so heavy that this was found of no use, and word was sent to Kingston for assistance. The Donnelly Salvage and Wrecking Co. sent a full wrecking outfit at once to the wreck, but as the vessel is full of water, and her bottom pretty well broken, it may be some days before she is afloat. The hull is not insured, but the cargo is covered in Chicago. This will be remembered as the steamer that sank in the Sault River and carried her cargo of wet wheat to Chicago by special permit from the U. S. authorities. Capt. Walton has been on the steamer Enterprise until two weeks ago, and only joined the Clinton on this trip down.

The Divers of the Donnelly Salvage and Wrecking Co. examined the new suction pipe being laid for the use of the city, and on their report, the arbitration appointed by the Chancery Court Judge condemned the pipe as not being fit for the use intended. MAGNET.

DETROIT, MICH.

At the recent citizens' regatta held here three yachts planned and built by Mr. O. M. Hepburn, of the Davis Boat and Oar Co., were winners in the race. In the second class, the "Alice Enright" won easily; the third class, the "Shamrock;" the sixth class, the "Lois." All these boats are well known amongst the yachtsmen in this vicinity, and they show up well for their designer and builder.

Thomas Murphy, John W. O'Keefe and Emil F. Krell have organized the Michigan Wrecking and Salvage Co., with a capital stock of $60,000. The headquarters will be in Detroit and the company will carry on a general towing, wrecking and salvage business, and will control an equipment second to none on the lakes.

The steam barge Burlington passed down Friday night with seven good-sized barges in tow. All were lumber laden, their combined cargoes amounting to 3,350,000 feet. Pretty good work for a little steamer 35 years old.

The steam sand sucker Companion landed her first load of coal from the Progress on Saturday. Considerable delay was experienced in getting the Progress' hatch covers off and in adjusting the pipes, but it is expected the cargo will now be rapidly removed under the contract awarded to Parker & Millen.

Ed. Kendall, of the Kendall Marine Reporting Co., of Port Huron, has just had placed in position the largest sign ever put up on any dock along the lakes. It measures over 1,500 feet in length, and each letter is over 4 feet in height.

Samuel F. Hodge & Co., the Riverside Iron Works have been awarded the contrart to build the triple expansion engines for the larger passenger steamer to be built by the American Steel Barge Co. for the World's Fair, the dimensions of the cylinders will be 26, 62 and 94 inches. The Hodge engines are well known for their perfect workings and Capt. McDougall has well placed this his latest contract.

BAY CITY, MICH.

Special Correspondence to The Marine Record.

The propeller Oneida, owned by the Davidson Transportation Co., goes into the dry dock this week for a rebuild.

The steamer Handy Boy that was pulled out and has been lying at the Marine Railway Co.'s yard all winter, has been recaulked and is being painted up preparatory to going in the passenger business between here and Saginaw. She is owned by Capt. Armstrong.

Sam Mason, fireman on the tug Maud S., was drowned by the overturning of the small boat he was in, while on his way to meet the tug at the mouth of the river.

The water is still very low in the bay, it being especially noticeable at the beach. Around the boat house, where last year there was enough water to float the boats, the ground is now several inches above the water.

A large raft containing between four and five million feet of logs belonging to the Inman Lumber Co., of Saginaw, and in tow of one of the Michigan Log Towing Co.'s tugs went ashore at the mouth of the river last Friday night in the storm. Some of the bags broke and the logs were scattered, and piled up along the beach. It has taken a fleet of tugs and a large crew of men four days to get them together again.

A contract has been secured by F. W. Wheeler & Co., for another steel boat to be a duplicate of the W. H. Gilbert. Mr. Wheeler is out of the city, so no particulars could be secured. This, with the work on hand at present, promises to keep the yard busy for some time to come.

The launch of the monster steel steamer W. H. Gilbert, at F. W. Wheeler & Co.'s yard, last Thursday afternoon was witnessed by several hundred people. It was as pretty a launch as has been seen here for some time. She left the ways at 3.20 p. m., both bow and stern striking the water at the same instant. Her draft is very light, she draws less than four feet. Her dimensions are: length of keel 328 feet, over all 345, breadth of beam 42½, depth of hold 20½, gross tonnage 2,820, net 2,200. She has undoubtedly the finest equipment of any freight boat on the lakes. The engines are triple expansion, the cylinders being 24, 36 and 63 inches in diameter, with a ¼4-inch ssroke. Steam is supplied by a battery of three boilers, each 12 x 12. The most approved style of Worthington condenser is used, and the vessel is equipped with electric light throughout, the Edison system being used. There are nine hatches allowing the fastest possible time in loading and unloading. Steam for the windlasses and hoisting apparatus is supplied directly from the battery of boilers, and not from a pony boiler as generally used. She is owned by the Erie Transportation Co., and will hail from Erie, Pa. Capt. Calvin Chamberlain, of St. Clair, will command her.

J. P. R.

THE LIGHTHOUSE BOARD SAT UPON BY THE WESTERN IRON ORE ASSOCIATION.

The seemingly arbitrary ruling of the Lighthouse Board during the past week in suspending the officers engaged in lighting the St. Mary's River has met with a determined opposition at Cleveland. The following resolutions were unanimously adopted by the Western Iron Ore Association at a meeting held on Wednesday afternoon and copies ordered sent to the Secretary of the Treasury and the Naval Secretary of the Lighthouse Board:

WHEREAS, the members of the Western Iron Ore Association of Cleveland, O., represent all the important iron mining interests of the Lake Superior region, and transport yearly by vessel from Lake Superior to lower lake ports millions of tons of iron ore, the vessels owned and controlled by them representing an enormous investment of capital. And,

WHEREAS, the safety of cargoes and vessels will, in the opinion of the association, be greatly imperiled unless range lights are placed in St. Mary's River at points which the practical experience of navigators has shown to be necessary, rather than as indicated by the courses laid down in the government charts, which have become in many respects untrustworthy by reason of artificial and natural changes in the channel; and,

WHEREAS, Col. Ludlow and Commander Heyerman, who are both officers of the utmost efficiency, and who have thoroughly and carefully investigated the whole subject, have appreciated the importance of locating lights other than those directed by order of the Lighthouse Board and have been summarily released from duty because they have respectfully protested against the location of lights which would seriously interfere with the safe navigation of the river and would likely result in the destruction of property, and perhaps loss of life; now, therefore, be it

Resolved, That the Western Iron Ore Association of Cleveland respectfully and earnestly protests against the action of the Lighthouse Board in relieving Col. Ludlow and Commander Heyerman without giving these officers an opportunity to appear before the board and to fully explain the results of their careful personal investigations, and their reasons for their action and the importance of having a sufficient number of adequate lights properly located on the St. Mary's River, And be it further

Resolved, That this association, having full confidence in the ability, candor and integrity of these efficient officers, respectfully request that the Lighthouse Board shall reconsider its hasty action in the premises, the members of this association feeling assured that after an impartial investigation the conduct of these officers in their zealous and worthy efforts to protect the vessel interests of the Great Lakes, will meet with the hearty approval of all fair minded officials. And be it further

Resolved, That the secretary of this association be instructed to telegraph to the Secretary of the Treasury and the Secretary of the Lighthouse Board the substance of this resolution and to transmit forthwith to each of them a copy of the same.

THE first iron steamer to round the Cape of Good Hope was the East India Co.'s paddle steamer Nemesis, in 1840. Her dimensions were 184 ft. by 25 ft. by 11 ft. 630 tons, 120-horse power, built by Laird, engined by Forrester. This vessel, in a gale off the Cape, split down 7 feet on each side amidships, and very nearly foundered. She was beached in Delagoa Bay, and there logs of timber 20 feet long by 12 inches broad and 6 inches thick were bolted along each side amidships to strengthen her. Her frames were spaced 17 inches, while her draft was only 5 feet 6 inches. To give longitudinal strength, the next ship, the Phlegetheon had longitudinal bulkheads in engine room.

Maritime Law.

District Court, D. South Carolina. April 23, 1892.

SEAMAN'S WAGES—REFUSAL TO GO ABOARD—INTOXICATION—CONTRACT.

Where a seaman, who has signed shipping articles, went to his vessel, on her sailing day, intoxicated, and declined to go aboard, and the master, being pressed for time, thereupon shipped another man, held that, while the fact that he was drunk was not a sufficient ground for a recission of his contract, his refusal to go aboard entitled the master to supply his place, and, when the place was filled, no subsequent application could help him.

Circuit Court, E. D. New York, March 24, 1892.

COLLISION—VESSEL CARRYING OWNER'S GOODS—LOSS OF VOYAGE—DAMAGES—HOW ASCERTAINED—FREIGHT.

A vessel carrying her owner's goods only is not earning any freight as a separate interest; hence when she is lost at sea by collision her owner cannot recover, as for loss of freight, the estimated amount that such a vessel could have been chartered for to carry a similar cargo on a similar voyage. The proper rule of damages, is satisfied by taking the market value of the vessel at her sailing port at the time she was devoted to the voyage, with interest thereon, together with her stores, wages, and any other items of expense reasonably incurred for the voyage up to the time of loss, with interest.

District Court, S. D. New York, April 1, 1892.

1. SALVAGE—ELEMENTS OF—PREVENTION OF DAMAGE TO PROPERTY OF OTHERS.

When a vessel has gone adrift through negligence, and is drifting towards other vessels, which she is likely to injure, the saving of her owners from liability to pay any such damages as was likely to arise, and which owners would be called on to pay, should be taken into account in determining the amount of a salvage award.

2. SAME—AWARD.

Seven hundred and fifty dollars salvage awarded a tug worth $15,000 for picking up five scows worth $30,000, which had negligently got adrift in the Harlem river, and were liable, by collisions, to injure other property.

District Court, D., South Carolina, April 20, 1892.

ADMIRALTY — COSTS — GENERAL AVERAGE — LIBELLANT MAINLY SUCCESSFUL.

A suit in general average was brought by libelant, a shipmaster, against respondent, who denied the necessity for the jettison, thus making the main issue whether libelant's entire claim was a fraud. This suit was the only method of arriving at a solution of the question. Libelant was successful on the main issue, though the amount of his claim was diminished, for want of evidence which could satisfy the court. Held, that respondent should pay the costs.

In the present case the ship reached port, a jettison of cargo and other matters having occurred during the voyage. The usual and proper steps were taken. An average bond was executed, and the cargo delivered. An adjustment was made by an experienced adjuster. Respondents being dissatisfied, not with the manner of, but with the occasion for, the adjustment, this libel was brought. The answer denied any responsibility for the jettison, especially and particularly for much of the ship's property.

District Court, E. D. Michigan, April 30, 1892.

MARITIME LIENS—PRIORITY—MARITIME TORT—SEAMAN'S WAGES,

The maritime lien for damages arising from collision takes precedence of the lien for seaman's wages accruing prior to the collision. The John G. Stevens, 40 Fed. Rep. 331, and The F. H. Stanwood, 49 Fed. Rep. 577.

In Admiralty. On petitions for distribution of proceeds of sale of the schooner Nettie Woodward.

The questions in this case arise upon petitions for distribution of the proceeds of sale of the schooner Nettie Woodward, which was condemned and sold under the process and order of this court at the suit of the original libelant. The proceeds in the registry of the court are insufficient to pay the decree awarded against the vessel. The Western Transit Company holds a degree for damages resulting to its steamer Commodere from a collision in the St. Clair river, for which the schooner was adjudged solely in fault, and asks that its decree may be declared a lien upon the proceeds of sale paramount to those of the intervenors, who are the master and crew of the schooner, and in whose decrees for wages accruing prior to the collision have been entered. The master and seamen unite in a petition praying priority of payment of their decrees over that for the damages caused by the collisfon. The Nettie Woodward is a Canadian vessel, and, under the laws of the dominion of Canada, the master is given a lien for wages co-ordinate with that of the crew.

OVERHANGING BOWS AND STERNS.

There are very few cases recorded where the changes made from the old straight bow and square stern have increased the speed of the yacht. It of ccurse gave more deck room and a better chance to handle the running gear. But the actual value of overhanging bows and stern of yachts has always been a puzzling question to yachtsmen. There is no doubt about the artistic effect.

"The theory often quoted," says Forest and Stream," that a yacht may measure but 46 feet when at anchor, and yet increase this length by 20 feet as soon as she begins to move, is so absurd that the only wonder is that it has found any adherents, and yet there are not a few yachtsmen content to accept it as the true explanation of the Gloriana's superiority.

IRON ORE SHIPMENTS AT TWO HARBORS.

DULUTH, MINN.—Two Harbors ore shipments for the past week have been very large, in fact, far ahead of any previous week in the history of the Minnesota range, making a total for the year to date of 195,500 gross tons. Twenty-two train loads of ore were dumped into the ore docks on Wednesday, being 438 cars of 25 tons each, and this is to be the average hereafter. It is probable that the Chandler and Minnesota mines will together ship 1,200,000 gross tons during the year. The largest cargo out of the Minnesota this year has been that of the new Thomas Wilson, of the McDougall fleet, which has just carried 2551 tons on 14 feet of draft. The new Samuel Mather, on her maiden trip, took over 2,400 tons and made the Sault Canal in 30 hours from the ore docks.

Contractor Dear, who is building the ore docks of the Duluth & Winnepeg on Allouez Bay, expects to have them ready for business by August, but it does not seem likely that he will be able to carry all his work in that time. The railway will not be completed as early as that owing to the great difficulty experienced by the almost incessant rains of Spring which have filled the swamps and the streams and preventing grading.

The Iron Range road expects to have its branch line run to the mines by August 15, but it will hardly by able to ship much Mesaba ore, unless it be from the Cincinnati mine, this year. The lessees of the Pewabic mine, the Kimberly syndicate, are busy stripping and getting ready to ship. They estimate that to carry out the provisions of their lease it will be necessary to mine nearly 1,000,000 tons a year from the mine for 20 years. A steam shovel will be used to mine the ore, so soft and gravel like is it. This ore will be shipped over the Duluth, Mesaba and Northern road to ore docks on the bay here. At the yards of the Steel Barge Co., only 5 vessels are on the stocks, besides the passenger boat, which will be soon started now. The Company is getting excellent report of cargoes carried, among the latest being a load of 3,000 tons of coal on the 118, between Buffalo and Milwaukee. It was the first visit of a whaleback to Milwaukee.

A NEW ROCK DREDGE.

The Bower Dredging Company, of Chicago, has closed a contract with the Milwaukee Dry Dock Co. for the construction of a hull for a dredge unlike anything ever introduced in this part of the country, although similar dredges are being operated with great success on the Pacific Coast. The hull will be 95 feet long, with 32 feet beam, and 9 feet 6 inches depth. The dredge is to be of sandsucker model, with a powerful revolving knife capable of grinding up heavy clay and shale or any other rocky substances, attached to the end of the suction pipe. It is said that recently on the Pacific Coast rocks 6 feet in diameter were literally ground into atoms and removed by one of these machines. Everything thus ground and stirred up is lifted to the surface in combination with water, and if desired can be conveyed a distance of one mile for filling purposes, in tubes resting upon pontoons or pile supports. The dredge can be operated in water 40 feet deep if necessary. All of the machinery for the craft is to be obtained from the Pacific Coast. Steam is to be furnished by four tubular boilers, such as are used in saw-mills. The main engine will weigh, with necessary shafting, in the neighborhood of 40 tons. The weight of the bed plate alone is placed at 9 tons. For holding the dredge in position, or shifting her from point to point, spuds operated on axles at the sides by steam cylinders will be utilized instead of the straight up and down heavy timber anchors made use of on our dredges. The designer of this novel dredging machine is L. W. Bates, a son of Capt. W. W. Bates, ex-commissioner of navigation. Its cost complete will be about $80,000. It is to be operated first on the Calumet River improvement at South Chicago, where a bed of rock was encountered last fall and must be cut through. The contract calls for the completion of the hull ready for launching by the 15th of August, and all ship-yard work connected with it must be finished on the 1st of September.

ANOTHER WORLD'S FAIR CURIO.

Mr. M. A. Stebbins, of Chicago, has perfected an invention whereby vessels can telegraph each other at sea and long distances apart, or vessels can telegraph with the shore and vice-versa. Instead of sounds being heard, sparks are seen and messages thus conveyed from rubber balloons carried on board ship, which are allowed to ascend from the deck, the instrument being on deck and connected by wire with the balloon. A whole kit with which to fit out a vessel for telegraphing in this way, including the small rubber balloons, can be stowed in a small hand satchel. Mr. Stebbins proposes to exhibit this aerial telegraph invention on Lake Michigan vessels within a few weeks, and will also exhibit during the World's Fair. Mr. Stebbins is the owner of 27 foot launch, which steams 10 miles an hour, and is building another of larger dimensions at Larson's shipyard, in Chicago, to have good power and speed.

CAPT. F. B. HACKETT, of Amherstburg, Ont., has recovered 92 bars of railroad iron which were lost with the steamer Mayflower on Point Pelee 40 years ago.

NOTICES TO MARINERS.

COMPASSES—HEELING ERROR—SPECIAL WARNING TO MARINERS.

The attention of Mariners has been directed by the English Board of Trade "to the necessity of exercising a constant watchfulness in regard to the error of navigating compasses, more particularly to the heeling error, the neglect of which is doubtless a common, though often unsuspected, cause of the stranding of many vessels. Serious changes frequently take place in the character and amount of the heeling error, as the ship changes her magnetic latitude from (1) the vertical force arising from the permanent magnetism of the ship, the error from which is greatest in high latitudes; (2) from vertical induction in vertical and transverse soft iron, generally (such as beams, etc.), the error from which is also greatest in high latitudes. It is difficult, therefore, to predict with any great accuracy the change that will take place, observations at every possible opportunity being the only reliable safeguard. In the northern hemisphere in ships built with their heads from about SE, through N, to SW, (the usual effect of the permanent magnetism of the ship then conspiring with that of her vertical and transverse soft iron,) the north point of the compass needle, assuming the compass to be on the upper deck and on the after portion of the ship as usual, will, as a general rule, be drawn to windward or to the high side of the ship, the nearer the ship's head was to N whilst building, the greater the error that may be expected; the effect being to throw the ship to windward of her supposed position when steering on northerly courses, on to leeward on southerly courses. In ships built with their heads about SE, through S. to SW. (the usual effect of the permanent magnetism, and that of the traverse, etc., iron being then contrary to each other), the north end of the compass needle may be drawn to leeward, depending upon whether the verticle force of the permanent magnetism or that of the induced magnetism o transverse iron predominates, but the error would then, as a general rule, be small in north latitudes. It has been established as rule, however, that in the Northern hemisphere (in compasses above the upper deck) in the majority of iron ships, the north point of the compass needle is drawn to windward, the consequence being that if this is not allowed for, a ship will go to windward of her supposed position on northerly courses and to leeward on southerly courses. The heeling error is always greatest with the ship's head at or near N. or S. by the disturbed compass, and least, or nil, with the ship's head E. or W. It is particularly important, therefore, should the vessel heel over either from the effect of the wind, or the cargo, when steering in a northerly or southerly direction, that the mariner should use every precaution, and never lose an opportunity of ascertaining the errors of his compass. The heeling error may be small or large, depending greatly upon the position of the compass—it has been known to exceed 2 deg. for every degree heel of the ship—and is directly proportional to the amount of heel, consequently if the error at N. or S. for 1 degree of heel is known, the error for any other direction of the ship's head, and amount of heel, can be found by the usual method. Mariners are further warned that the adjustment of compass by magnets, soft iron, etc., is for bringing the error within manageable limits, and for equalizing the directive force of the needle, and must only be considered approximate for the latitude in which the adjustment was made, and that they should lose no opportunity of verifying the error both in port and at sea, as it is constantly changing from numerous causes, the chief amongst which are heeling, change of latitude, change of cargo, collision, after repairs, and from the ship remaining with her head in one direction for a length of time, etc.—[Marine Board Offices, 13th April, 1892.

A WRECKING AND TOWING LINE.

THE square flag with a white G on a dark background as here shown, is the well known house-flag of the Grummond Line frequently sighted at all points on the Great Lakes. Capt. S. B. Grummond is owner of this large fleet of passenger, towing, and wrecking steamers and besides exercising a direct personal attention to the affairs of his line he has associated with him as heads of departments Mr. George Elsey, Jr., general manager of the wrecking and towing lines, and Mr. Beebe, who is the efficient and courteous passenger agent with Farrasey & Marron, in Cleveland, as general freight and passenger agents.

The Grummond Line is without doubt the best known service line on fresh water and its success is due to the practical experience and energetic characteristics of its principal, who has passed through every stage of the work in which his industry now holds such a leading position.

Capt. S. B. Grummond from master of a tug (and one of the best at that) has held the mayoralty of the city of Detroit, and is now spoken of as a probable Republican nominee for governor of the state of Michigan. Be this as it may, with politics we have little or nothing to do, only in so far as the marine interests are conserved or repudiated, and in Capt. Grummond we find an able champion of all that tends to the best interests of maritime supremacy in the United States.

This season the large wrecking tug Manistique, Capt. Frank H. Danger, has been stationed at Mackinaw City, with the best outfit for wrecking purposes on the lakes and the ports of Detroit, Port Huron and Cheboygan are equally well equipped with the appliances most useful and necessary in all towing and wrecking undertakings, so that it is safe to say any casualty occurring in the vicinity of these ports would be efficiently and promptly attended to by the G Line.

A NEEDED SURVEY.

The United States lake survey party, with Lieut. C. S. Richie and Herman Kallman, Jr., in charge, have been engaged for the past month at Pelee Point, surveying the outer shoals three miles west of the Point. The first shoal they discovered contained 40,000 square feet with boulders of all shapes and sizes and the least depth of water over it 16 feet. The second shoal is 125 feet long and 50 feet wide and is made up of a conglomeration of boulders of all shapes and sizes and the least depth of water there is 13 feet, 5 inches. They also found the wreck of the schooner Nichols lost in 1872 loaded with iron ore, which is close to the channel and over which is a depth of 13 feet, 5 inches. They have also located one shoal of large rocks and boulders with water over it to the depth of 17 feet, 5 inches, off Colchester. Because the Dominion authorities will not issue a modern chart of their territory is no reason why the United States may not undertake to know what the bottom is like, hence the survey is a needed one and worthy of all time and skill spent in obtaining correct data.

United States Engineer Office, 34 West Congress street, Detroit, Mich., June 2, 1892. Sealed proposals in triplicate, for furnishing all plant, materials and labor, and excavating in St. Mary's Falls Canal, Michigan will be received at this office until two o'clock p. m., July 2, 1892, and then publicly opened. Preference will be given to plant and materials of domestic production or manufacture, conditions of quality and price (import duties included) being equal. Attention is invited to Acts of Congress, approved February 26, 1885 and February 23, 1887, Vol. 23, page 332, and Vol. 24, page 414, Statutes at Large. The Government reserves the right to reject any or all proposals, or to waive any informalities in the bids received; also, to award the contract upon other considerations than the price. For further information apply at this office, or at the U. S. Engineer Office, Sault Ste. Marie Mich. O. M. Poe, Colonel, Corps of Engineers, Bvt. Brig. Gen, U. S. A. 6-2-23.

United States Engineer Office, Room 90, 134 Van Buren street, Chicago, Ill., May 25, 1892. Sealed proposals in triplicate for constructing three miles or less of the Trunk of the Illinois and Mississippi Canal near the mouth of Rock River; For screening, sorting, and delivering sand and pebbles, and for excavating the lock pits and constructing the foundations for three locks, will be received at this office until 12 noon, central time, Saturday, June 25th, 1892, and then opened. Bidders are invited to be present. Blank forms of proposals and specifications will be furnished on application. General plans of the works can be seen, and other information can be had at the Office of Assistant Engineer, L. L. Wheeler, at Milan, Ill. The attention of bidders is invited to Acts of Congress approved February 26, 1885, and February 23, 1887, Vol. 23, page 332, and Vol. 24, page 414, Statutes at Large. Preference will be given to materials of domestic production conditions of quality and price (including duties) being equal. The United States reserves the reject any or all bids. W. L. Marshall Captain, Corps of Engineers. 6-2-23

EMMONS BLAINE, President and Treasurer.
WALTER F. COBB, Vice President.
W. I. BABCOCK, Manager.
O. R. SINCLAIR, Secretary and Asst. Treas.

Chicago Ship Building Company,

STEEL STEAM-SHIP BUILDERS.

101st Street and Calumet River, COLEHOUR, ILL.

INCORPORATED 1794.

Insurance Company of North America.

CAPITAL, Paid up in Cash, - - $3,000,000.00
ASSETS, - - - - - - 9,273,220.00

CHARLES PLATT, President. WILLIAM A. PLATT, Vice-President.
EUGENE L. ELLISON, 2nd Vice-President. GREVILLE E FRYER, Sec'y & Treas.
JOHN H. ATWOOD, Assistant Secretary.

Lake Marine Department. GEORGE L. McCURDY, Manager, CHICAGO, ILLS.

MARINE AND INLAND INSURANCE.

ATLANTIC MUTUAL INSURANCE COMPANY,

(ORGANIZED 1842.) Office, 51 Wall Street, NEW YORK.

Insures against Marine and Inland Transportation Risks and will issue Policies making Loss Payable in England.

Assets over $10,000,000 for the Security of its Policies.

The profits of the Company revert to the assured, and are divided annually upon the premiums terminated during the year; thereby reducing the cost of insurance. For such dividends, certificates are issued bearing interest until ordered to be redeemed, in accordance with the charter.

J. D. JONES, Prest. W. H. H. MOORE, Vice-Prest. A. A. RAVEN, 2nd Vice-Prest. J. H. CHAPMAN, Secy.

ORGANIZED 1881.

Michigan Fire and Marine Insurance Co.,

CAPITAL, - - - - $ 400,000
ASSETS, - - - - 900,000
LOSSES PAID, over - - - 1,500,000

D. WHITNEY, Jr., President. EUGENE HARBECK, Secretary.

This Company will transact a Hull and Cargo business on the Lakes during the season of 1892.

LOSSES PROMPTLY PAID. INSURE IN A STRONG HOME COMPANY. DETROIT, MICH.

CAPITAL $300,000.

The Marine Bank Company,

Incorporated in 1891 under State Law. CLEVELAND, OHIO.

Successors to E. B. HALE & CO., established in 1852.

DIRECTORS:

W. H. BARRISS, President. H. C. RANNEY, Vice-President. W. B. HALE, Cashier.
C. E. BURKE. THOS. FITZPATRICK. THOS. H. WHITE. MARTYN BONNELL

Would be pleased to meet or correspond with any one whose present Banking relations are not entirely satisfactory, or who, for any reason, propose to open a new account.

We promise to make every effort to make our Bank a safe, agreeable and profitable place to do business.

Improved Bolt Helmet.

ESTABLISHED, 1844.

A. SCHRADER & SON.

Manufacturers of Submarine Armor AND Diving Apparatus.

32 ROSE ST., N. Y.

McKinnon Iron Works

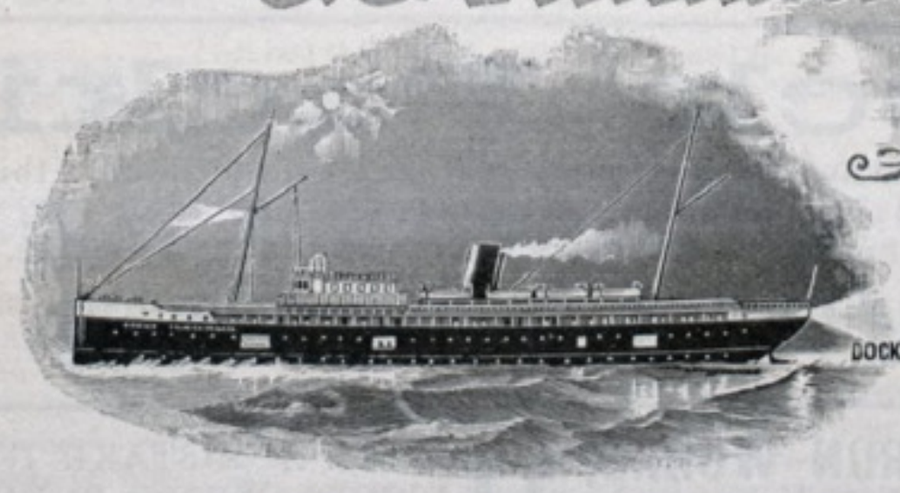
ASHTABULA HARBOR, O.

Machinists, Boilermakers, Shipsmiths and Steamfitters.

We carry a large and complete stock of Engineer's Supplies, Oils, Packings, Hose, Air Pump Valves, Brass Goods, and other Steam Fittings. You will find our prices as low as at any place on the lakes, and our goods the best we can buy.

W. S. McKINNON, Proprietor.

C. S. Richardson Fueling Co.



COAL

DOCKS { FOOT OF NORTH MARKET ST. / 18TH STREET BRIDGE. / NORTH PIER. / ILLINOIS CENTRAL SLIP'S }

Office Foot of North Market St.

CHICAGO.

PITTMANS & DEAN COMPANY,

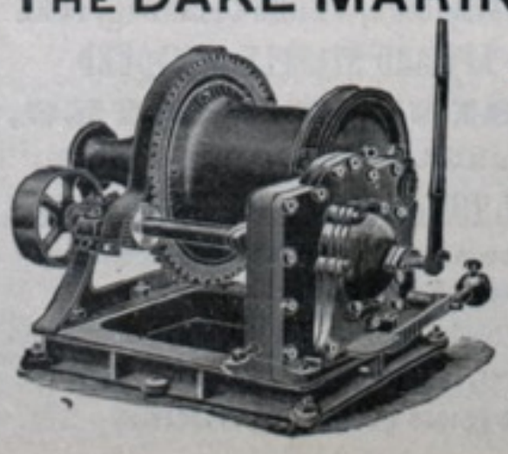
STEAMER COALING DOCK.

ERIE MANSFIELD A SPECIALTY.

DOCK FOOT OF RIOPELLE STREET,

NEXT TO UPPER DRY DOCK, DETROIT, MICH.

THE DAKE MARINE HOISTING ENGINE.



SIMPLE, DURABLE AND ECONOMICAL.

SATISFACTION GUARANTEED.

PERFECT CUT GEARS.

MANUFACTURED BY

The Dake Engine Mfg. Co.,

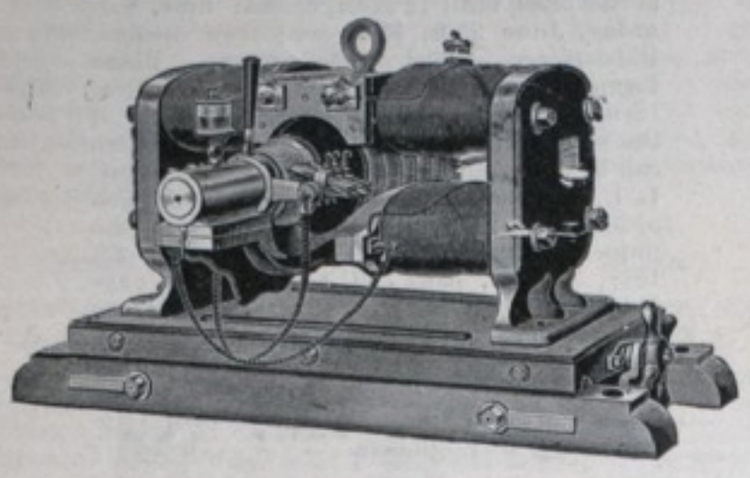
GRAND HAVEN,

Send for Catalogue before buying. MICHIGAN

FRANK E. KIRBY, President. RUDOLPHUS FULLER, Superintendent. R. HUMFFREYS-ROBERTS, Secretary and Manager.

FONTAINE CROSSING CO.,

Corner Russell Street and Boulevard, DETROIT, MICH.



MANUFACTURE THE CELEBRATED

FULLER DYNAMOS AND MOTORS

The slowest speed and most perfectly Automatic Dynamo in the world, therefore

THE BEST FOR STEAMBOAT INSTALLATION.

NO VIBRATION.

SIGNAL WORK A SPECIALTY. VENTILATING FANS AND MOTORS.

Steamers already equipped with our Plants: E. C. POPE, MINNIE M., SOO CITY, SAPPHO.

Correspondence Solicited. **TELEPHONE 755.—4 Rings.**

LOUIS K. GILLSON, PATENTS.

87 METROPOLITAN BUILDING,
Cor. Randolph & La Salle Sts. CHICAGO, ILL.
Free-24-page pamphlet, "Pointers from the Patent Laws."

P. M. CHURCH & CO.,

SAULT STE. MARIE, MICH.

SHIP CHANDLERY, HARDWARE, PAINTS, OILS, AND ALL CLASSES OF

VESSEL SUPPLIES.

Coppersmith Shop in connection.

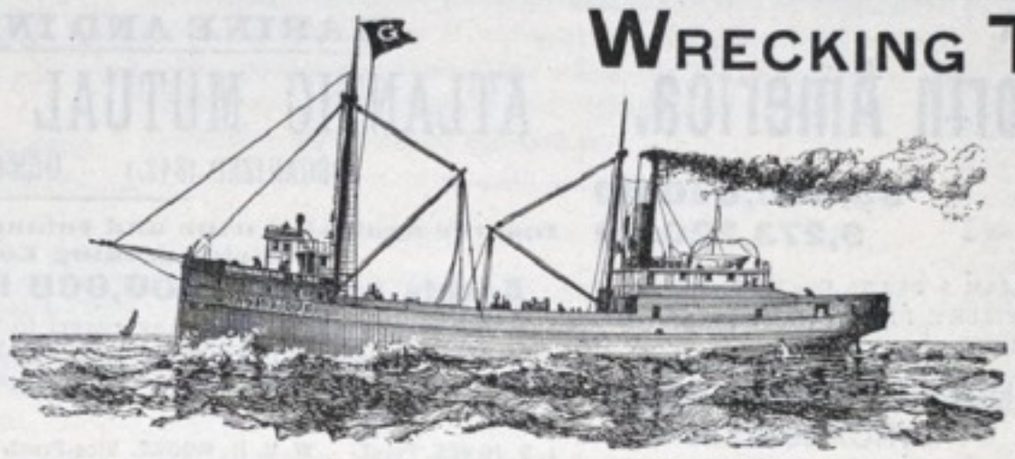
Corner Portage and Ashmun Sts.

TELEPHONES, { OFFICE No. 7. RESIDENCE No. 4.

S. B. GRUMMOND,

OWNER OF FIRST-CLASS TUGS FOR **WRECKING, RAFT TOWING, Etc.**

TUGS: MANISTIQUE, CRUSADER, M. SWAIN, CHAMPION, JOHN OWEN, WM. A. MOORE, GLADIATOR.



WRECKING TUG MANISTIQUE,

CAPT. FRANK H. DANGER,

STATIONED AT MACKINAW CITY.

With great power and speed, light draft, and can do her own lightering and is in fact the only complete Wrecker on fresh waters carrying Complete Wrecking Outfit on board, including New Pumps, Improved Horizontal Straight Base Hydraulic Jacks, 2 Derricks, Steam Hoists, Buckets, Sub-Marine Divers, New 10-12-14 inch Hawsers, 1,200 feet long.

SATISFACTION GUARANTEED.

OFFICES OPEN DAY AND NIGHT.
Branch Offices & Warehouses at PORT HURON & CHEBOYGAN, MICH.
☞ PLENTY OF WRECKING MATERIAL AT ALL STATIONS NAMED.

General Office & Warehouse,
FOOT OF FIRST ST., **DETROIT.**

LONG DISTANCE TELEPHONE 1644, BROOKLYN.

SOUTH BROOKLYN STEAM ENGINE WORKS.

VAN BRUNT AND SUMMIT STREETS, BROOKLYN, N. Y.
SUCCESSORS TO WM. A. LIGHTHALL.

LIGHTHALL SURFACE CONDENSERS.

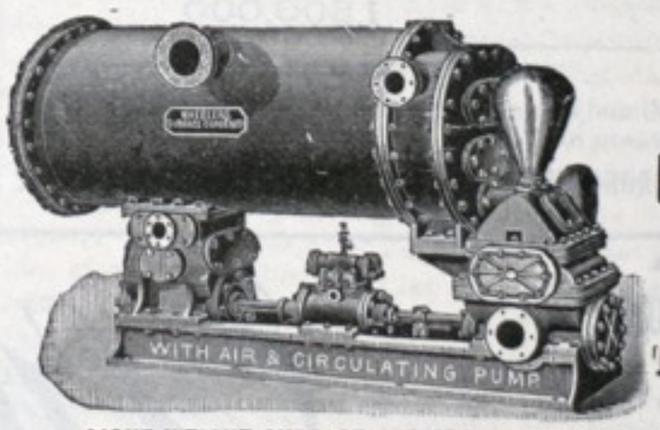
Lighthall Surface Condensers with Cobb's Improvements. Light Weight Brass Condensers a Specialty. Also Feed Water Heaters, Iron and Brass Tube Heads, Screw Glands, Paper, Wood and Fibre Packings, Etc.

Builders of Brass and Composition Surface Condensers for U. S. Cruisers MAINE, No. 11, Gunboats Nos. 5 and 6, CONCORD and BENNINGTON and HARBOR DEFENCE RAM.

ADDRESS ALL CORRESPONDENCE TO THE COMPANY.

WHEELER CONDENSER AND ENGINEERING CO.,

92 & 94 Liberty St., NEW YORK.



Proprietors and Manufacturers of

WHEELER'S IMPROVED

Patent SURFACE CONDENSERS

ALSO THE

Wheeler "Admiralty" Condenser,

WITH PATENT SCREW GLANDS,

The Wheeler-Lighthall Condenser

With Patent Waterproof Packing.

LIGHT WEIGHT SURFACE AND JET CONDENSERS, FOR STEAM YACHTS, ETC., A SPECIALTY

Garlock Packings.

Our Elastic Ring, Sectional, Spiral and Special Water Packings are the pioneers in this line. For Steam, Water, Ammonia, High Speed Work and all places where packings are used they excel. Try our Special water Packing, fully guaranteed for water end of pumps. See that our trade mark is on each package. Correspondence solicited.

PALMYRA, N. Y.
ROME, GA.
OMAHA, NEB.
PORTLAND, OR., 170 2d st

The Garlock Packing Company.

NEW YORK, 194 Water St.
CHICAGO, 94 Franklin St.
PHILADELPHIA, 22-24 N. 4th St.
PITTSBURG, 54 Fifth Ave.

H. G. TROUT, KING IRON WORKS, BUFFALO, N. Y.

MANUFACTURER OF

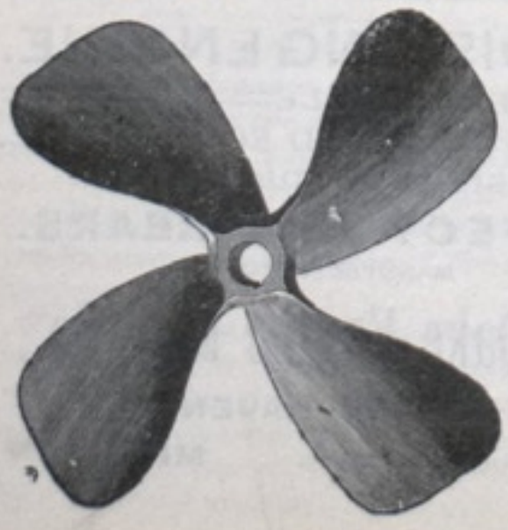
TRIPLE EXPANSION, THREE CYLINDER, FORE AND AFT AND STEEPLE COMPOUND

MARINE ENGINES,

High and Low Pressure Engines.

SECTIONAL TUG & YACHT PROPELLER WHEELS.

Cowles Aluminum and Manganese Bronze Propeller Wheels.



These Wheels are noted for their extra speed and towing power, or a proportionate saving of coal.

☞ PRICES QUOTED ON APPLICATION

U MAKE A MISTAKE IF YOU DON'T COMPARE THESE PRICES BEFORE BUYING A PAIR OF

MARINE GLASSES OR A BAROMETER.

Good Quality Marine Glass,	21	Lignes,	Only	$10 00	GOOD POWER.
" "	24	"	"	12 00	ACHROMATIC.
" "	26	"	"	14 00	
U. S. Signal,	21	"	"	12 00	HIGH POWER
"	24	"	"	14 00	DAY and NIGHT.
"	26	"	"	16 00	
Maximum,	24	"	"	25 00	FINEST POWER.

Aneroid Barometers from $5.00 to $75.00.
Chart Protractors, 50 cents to 75 cents.
Transparent Chart Protractors, $1.50.

OUR GOODS THE BEST

BLACK & CO., Opticians, 145 Woodward Avenue, DETROIT, MICH.

☞ We make a Specialty of Refilling and adjusting Compasses, Repairing Marine Glasses, Barometers, Etc.

YES! OR NO.

DOES or does it not pay to advertise? Yes, if well done in old, established papers. No, if not well done, and if inserted in papers of no paid circulation. The Marine Record was established in 1878, and publishes more columns of advertisements than any other Marine paper. It pays well.